REMARKS

Claims 1-20 were pending. By this Amendment, claims 1, 14 and 19 have been amended to clarify the claimed subject matter, and claims 6, 7, 14, 15, 17 and 19 have been amended to correct informalities therein. Claims 1-20 remain pending upon entry of this Amendment, with claims 1, 14 and 19 being in independent form.

Priority

Applicant is not relying on the priority claim to overcome any of the rejections in the Office Action. Accordingly, an English translation of the priority document is not being submitted herewith.

The Examiner is respectfully requested to indicate whether the Examiner is requiring applicant to submit an English translation of the priority document.

Informalities

Claims 6, 7, 14, 15, 17 and 19 were objected to as purportedly having informalities. Claims 1 and 14 were rejected under 35 U.S.C. §112, second paragraph, as allegedly indefinite.

In response, the claims have been amended to address the formal issues referenced in the Office Action.

Withdrawal of the objection to the claims and the rejection under 35 U.S.C. §112 is respectfully requested.

Cited Art

Claims 1-3, 8, 9, 14 and 19 were rejected under 35 U.S.C. § 102(b) as purportedly anticipated by Cowan et al. (WO 01/01859 A1). Claims 4, 5 and 7 were rejected under 35 U.S.C. § 103(a) as purportedly unpatentable over Cowan in view of Fessler et al., "Model-based 3-D reconstruction of branching vessels". Claim 6 was rejected under 35 U.S.C. § 103(a) as

purportedly unpatentable over Cowan in view of Fessler and further in view of U.S. Patent No. 6,038,446 to Haselhoff (US 6,038,446). Claims 10-13, 15 and 20 were rejected under 35 U.S.C. § 103(a) as purportedly unpatentable over Cowan in view of Daugman (US 5,291,560). Claims 16-18 were rejected under 35 U.S.C. § 103(a) as purportedly unpatentable over Cowan in view of Daugman and further in view of Barequet et al., "Piecewise-Linear Interpolation between Polygonal Slices".

Applicant respectfully submits that the present application is allowable over the cited art, for at least the reason that the cited art does not disclose or suggest the following aspects of the present application:

(i) selecting an element graphic corresponding to at least a partial contour of a partial region in the desired region, approximating at least a partial contour of the element graphic to at least the partial contour of the partial region, repeating the selection and approximation at least twice, so that at least two selected element graphics overlap with each other, and making a first contour by combining at least the partial contour of the respective element graphics after the approximation (independent claims 1 and 19 of the present application);

(ii) extracting a plurality of partial regions from the desired region, combining the plural partial regions and synthesizing at least parts of the desired region, and making at least a partial contour of the synthesized region as a first contour (independent claim 14 of the present application).

Claims 1 and 19

Cowan, as understood by applicant, proposes an approach for measuring characteristics of an organ (or part thereof) from multiple images of the organ (or part thereof), including defining a spatial position of plural ones of the images, defining a reference model of the organ (or part thereof) scaled according to a distance between reference markers on the images,

defining boundary guide points associated with one or more images for which the spatial positions have been defined, converting the guide points to three-dimensional coordinates, defining an estimate model by fitting the reference model to the guide points, and calculating the characteristics from the estimate model.

Cowan, page 6 lines 31-38 (reproduced below), which was cited in the Office Action, proposes prompting the user to choose two or more points on the image to define a maximum extent for an estimate model and calculate volume of the mitral valve plane.

> As shown in Figure 6, the user may display in panel 22 an image taken of the long axis of the object, as indicated by the description below panel 22. The user selects the Base Points option 32 which then prompts the user to choose two or more points on the image to define the maximum extent for estimate model and calculate volumes of, for example, the mitral valve plane. The user selects the points by clicking in panel 22 and once the desired points have been selected the user accepts the base points indicated at 34. Further options may also be provided, for example advancing the image displayed in panel 22 to the next frame.

However, in the approach proposed in Cowan, the user does ***NOT*** select an element graphic corresponding to at least a partial contour of a partial region in the desired region. Stated another way, the points selected by the user in Cowan merely specify a maximum extent for an estimate model, but such points do NOT specify or select ***an element graphic corresponding to at least a partial contour of a partial region in the desired region***.

Further, Cowan, page 12 line 38 through page 13 lines 1-2, which was cited in the Office Action, merely proposes selection of additional guide points (which define the boundary of the estimate model) to improve the estimate model.

However, in the approach of Cowan, there is NOT repeating of (I) selection of an element graphic corresponding to at least a partial contour of a partial region and (II)

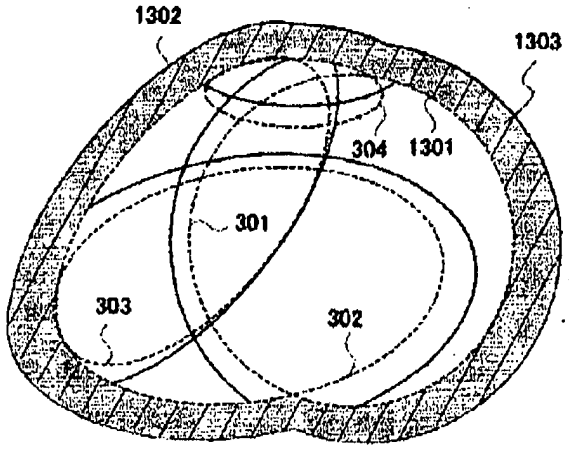
approximation at least a partial contour of the selected element graphic to at least said partial contour of the partial region.

Instead, in the approach proposed in Cowan, only single graphic is used as the estimate model, and such approach does ***NOT*** result in overlapping in graphics.

The repeating of the selection (of an element graphic corresponding to at least a partial contour of a partial region in a desired region) and approximation (of at least a partial contour of the selected element graphic to at least the partial contour of the partial region) at least twice, so that at least two selected element graphics overlap with each other, produces the result that the contour made by combining at least the partial contour of the respective element graphics is well-fitted to the entire contour of the desired region as a whole. An example of such aspects is shown in Fig. 13A (reproduced below) of the present application.

FIG. 13

(A)



In such example, the outer contour parts of respective ellipses 301 ~ 304 illustrated in dotted line are combined creates a curve that approximates, with high precision, an outer contour of a heart, and this curve can be set as a first contour.

The other cited references (including Fessler, Haselhoff, Daugman and Barequet), like Cowan, do not disclose or suggest the aspects of independent claims 1 and 19 of the present application of selecting an element graphic corresponding to at least a partial contour of a partial region in a desired region, approximating at least a partial contour of the element graphic to at least the partial contour of the partial region, repeating the selection and approximation at least twice, so that at least two selected element graphics overlap with each other, and making a first contour by combining at least the partial contour of the respective element graphics after the approximation.

Applicant submits that the cited art, even when considered along with common sense and common knowledge to one skilled in the art, does ***NOT*** render unpatentable the such aspects of (independent claims 1 and 19) of the present application. Accordingly, applicant respectfully submits that independent claims 1 and 19, and the claims depending therefrom, are allowable over the cited art.

Claim 14

As pointed out above, the approach proposed in Cowan uses only single graphic as the estimate model, and does ***NOT*** involve extracting a plurality of partial regions from the desired region.

Further, the view obtained from zooming and panning in Cowan is equated to selecting a desired region.

In addition, Cowan, page 9 lines 27-30 (reproduced below), was cited in the Office Action as purported proposing "combining the plural partial regions and synthesizing at least parts of the desired region":

As the user defines the guide points, the system converts these guide points to three-dimensional coordinates from the image position in space for each boundary guide point, and fits the model by forcing the model to adhere closely to the guide points, as will be discussed below.

Thus, Cowan proposes allowing the user to define guide points, which as already pointed out above, is used to specify the boundary of the estimate model.

However, the estimate model bears no required relationship to the view obtained from zooming and panning in Cowan.

Further, Cowan, page 12, line 38, through page 13, line 2, which was cited in the Office Action, merely proposes using only single graphic as the estimate model.

However, the approach proposed in Cowan is NOT capable of synthesizing at least parts of the desired region, nor can it make at least a partial contour of the synthesized region as a first contour.

Neither Cowan nor the other cited references disclose or suggests extracting a plurality of partial regions from the desired region, combining the plural partial regions and synthesizing at least parts of the desired region, and making at least a partial contour of the synthesized region as a first contour.

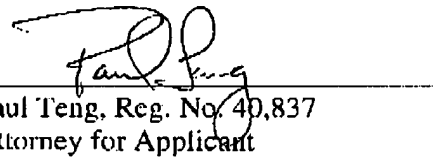
Applicant submits that the cited art, even when considered along with common sense and common knowledge to one skilled in the art, does ***NOT*** render unpatentable the above-mentioned aspects of claim 14 of the present application. Accordingly, applicant respectfully submits that independent claim 14 and the claims depending therefrom are allowable over the cited art.

In view of the remarks hereinabove, applicant submits that the application is now allowable, and earnestly solicits the allowance of the application.

If a petition for an extension of time is required to make this response timely, this paper should be considered to be such a petition. The Patent Office is hereby authorized to charge any required fees in connection with this amendment, and to credit any overpayment, to our Deposit Account No. 03-3125.

If a telephone interview could advance the prosecution of this application, the Examiner is respectfully requested to call the undersigned attorney.

Respectfully submitted,



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